## (43) International Publication Date 13 January 2005 (13.01.2005)

## **PCT**

# (10) International Publication Number WO 2005/003141 A3

(51) International Patent Classification<sup>7</sup>: C07D 501/04

(21) International Application Number:

PCT/IB2004/002203

(22) International Filing Date: 3 July 2004 (03.07.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:

555/CHE/2003 4 July 2003 (04.07.2003) II

(71) Applicant (for all designated States except US): ORCHID CHEMICALS & PHARMACEUTICALS LTD [IN/IN]; Orchid Chemicals & Pharmaceuticals Ltd, 476/14, Old Mahabalipuram Road, Sholinganallur, Chennai 600 119 (IN).

(72) Inventors; and

(75) Inventors/Applicants (for US only): PRABHAT, Kumar, Sahoo [IN/IN]; Orchid Chemicals & Pharmaceuticals Ltd. 476/14, Old Mahabalipuram Road, Sholinganallur, Chennai 600 119 (IN). VEMPALI, Anandam [IN/IN]; Orchid Chemicals & Pharmaceuticals Ltd, 476/14, Old Mahabalipuram Road, Sholinganallur, Chennai 600 119 (IN). SUNDARAVADIVELAN, Sivakumaran [IN/IN]; Orchid Chemicals & Pharmaceuticals Ltd, 476/14, Old Mahabalipuram Road, Sholinganallur, Chennai 600 119 (IN). PRAVEEN, Nagesh, Ganesh [IN/IN]; Orchid Chemicals & Pharmaceuticals Ltd, 476/14, Old Mahabalipuram Road, Sholinganallur, Chennai 600 119 (IN). VITTAL, Manikrao, Waghdare [IN/IN]; Orchid Chemicals & Pharmaceuticals Ltd, 476/14, Old Mahabalipuram Road. Sholinganallur, Chennai 600 119 (IN). PANDURANG. Balawant, Deshpande [IN/IN]; Orchid Chemicals & Pharmaceuticals Ltd, 476/14, Old Mahabalipuram Road, Sholinganallur, Chennai 600 119 (IN). PARVEN, Kumar, Luthra [IN/IN]; Orchid Chemicals & Pharmaceuticals Ltd, 476/14, Old Mahabalipuram Road, Sholinganallur, Chennai 600 119 (IN). PRATIK, Ramesh, Sathe [IN/IN]; Orchid Chemicals & Pharmaceuticals Ltd, 476/14, Old Mahabalipuram Road, Sholinganallur, Chennai 600 119 (IN).

- (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

#### Declaration under Rule 4.17:

of inventorship (Rule 4.17(iv)) for US only

### Published:

- with international search report
- with amended claims

(88) Date of publication of the international search report:

10 March 2005

Date of publication of the amended claims: 21 April 2005

[Continued on next page]

(54) Title: AN IMPROVED PROCESS FOR THE PREPARATION OF CEFDITOREN

(57) Abstract: The present invention relates to an improved process for the preparation of Cefditoren of formula (I), the said process comprising the steps of: i) converting the compound of formula (II) to a compound of the formula (III) using TPP and sodium iodide in the presence of THF, water, and base; ii) reacting the compound of formula (III) with 4-methyl-5-formyl-thiazole to produce a compound of formula (IV); iii) deesterifying the compound of the formula (IV) to yield compound of formula (V); iv) converting the compound of formula (V) to compound of formula (VI) in the presence of a base and solvent; v) converting the compound of formula (VI) into compound of formula (VII) by enzymatic hydrolysis; and vi) reacting compound of formula (VII) with compound of formula (VIII) in the presence of solvent and base to produce compound of formula (I).

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.